Enkephalon - technological platform to support the diagnosis of alzheimer’s disease through the analysis of resonance images using data mining techniques

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Abstract

Dementia can be considered as a decrease in the cognitive function of the person. The main diseases that appear are Alzheimer and vascular dementia. Today, 47 million people live with dementia around the world. The estimated total cost of dementia worldwide is US $ 818 billion, and it will become a trilliondollar disease by 2019 The vast majority of people with dementia not received a diagnosis, so they are unable to access care and treatment. In Colombia, two out of every five people presented a mental disorder at some point in their lives and 90% of these have not accessed a health service. Here it´s proposed a technological platform so early detection of Alzheimer. This tool complements and validates the diagnosis made by the health professional, based on the application of Machine Learning techniques for the analysis of a dataset, constructed from magnetic resonance imaging, neuropsychological test and the result of a radiological test. A comparative analysis of quality metrics was made, evaluating the performance of different classifier methods: Random subspace, Decorate, BFTree, LMT, Ordinal class classifier, ADTree and Random forest. This allowed us to identify the technique with the highest prediction rate, that was implemented in ENKEPHALON platform.

Keywords: Resonance images, Image processing, Image mining, Alzheimer’s disease